



**DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD
2461 EISENHOWER AVENUE
ALEXANDRIA VIRGINIA A 22331-0600**



DDESB-IK

02 JUL 2002

**MEMORANDUM FOR HEADQUARTERS AIR FORCE SAFETY CENTER
(ATTENTION: SEW)**

SUBJECT: Approval of Proposed Noble Eagle Maximum Credible Events and Related Quantity Distance

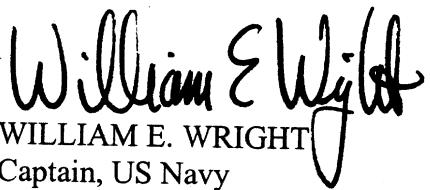
- References:**
- (a) E-mail, 28 June 2002, from Mr. Eric Olson (AFSC/SEEW), Subject: Request for DDESB Approval of Noble Eagle Aircraft QD, with attachment: Quantity-Distance Determinations Resulting from Noble Eagle Testing Program
 - (b) Meeting, 20 June 2002, DDESB Office in Alexandria, VA between Mr. Olson, HQ AFSC/SEW and Dr. Ward, Dr. Covino, Mr. Deschambault, and Mr. Newbern, DDESB Secretariat

Reference (a) requested Department of Defense Explosives Safety Board (DDESB) approval for the establishment of specific maximum credible events (MCE) and quantity-distances (Q-D) for selected aircraft loading configurations (F-15 and F-16 with AIM-7, AIM-9, or AIM-120 Missiles) associated with Noble Eagle, in the open or in lightweight structures. Based on information provided by reference (a), use of the MCE and QD for those specific aircraft loading configurations is approved. Siting will be in accordance with our attachment.

During missile loading/unloading operations, the MCE for which the aircraft location is sited will also be the MCE applicable to the trailer transporting the weapons to/from the aircraft location. The trailer MCE will not exceed the aircraft MCE and can be controlled either by limiting the number of weapons on the trailer or through testing (i.e., testing of AIM-120 missiles loaded in a single layer, and in alternating directions) that has demonstrated that propagation between missiles is prevented, and the results have been approved by the DDESB.

The Air Force Safety Center (AFSC) has worked closely with this office throughout Noble Eagle: Testing rationale was shared; test requirements were coordinated; and test results were analyzed/shared. However, this information needs to be consolidated into a single document for future reference. During the reference (b) meeting, Mr. Olson agreed to provide a document that recorded the rationale and technical information related to the MCE and Q-D established for each Noble Eagle aircraft-loading configuration. Request this document be provided to the Secretariat within 30 days.

DDESB point of contact is Mr. Eric Deschambault. He can be reached at commercial phone: 703-325-1369; DSN: 221-1369; and e-mail: Eric.Deschambault@ddesb.osd.mil.


WILLIAM E. WRIGHT
Captain, US Navy
Chairman

Attachment
As stated

QUANTITY-DISTANCE DETERMINATIONS RESULTING FROM NOBLE EAGLE TESTING PROGRAM

Section I – Background

The purpose of the Noble Eagle Testing Program was to establish Maximum Credible Events (MCEs) for the aircraft configurations shown in Table 1. The MCEs would then be used to develop quantity-distances. Table 2 shows the actual missile configurations (missile version and warhead type) used in the tests.

Table 1. Aircraft Configurations¹

F-16	
Configuration 1	4 AIM-120 missiles, 2 AIM-9 missiles
Configuration 2	2 AIM-120 missiles, 2 AIM-9 missiles, 2 AIM-7 missiles
Configuration 3	2 AIM-120 missiles, 4 AIM-9 missiles
Configuration 4 ²	6 AIM-120 missiles
F-15	
Configuration 1	4 AIM-120 missiles, 2 AIM-9 missiles, 2 AIM-7 missiles
Configuration 2	4 AIM-9 missiles, 4 AIM 7 missiles
Configuration 3	6 AIM-120 missiles, 2 AIM-9 missiles

Note 1: Configuration numbers do not correspond to configuration numbers in AFMAN 91-201.

Note 2: This configuration was actually tested prior to the Noble Eagle test program. It is included here for purposes of obtaining DDESB approval.

Table 2. Missile Configurations

Missile	Missile NEWQD	Basis for Missile NEWQD
AIM-120, WDU-33/B Warhead	16.9 lbs	Warhead NEWQD (15 lbs) plus some motor contribution.
AIM-120, WDU-41/B Warhead	19.0 lbs	Warhead NEWQD (16 lbs) plus some motor contribution.
AIM-9L or M, WDU-17 Warhead	7.4 lbs	Warhead NEWQD only.
AIM-9P	10.5 lbs	Warhead NEWQD only.
AIM-7M, WAU-17 Warhead	36.0 lbs	Warhead NEWQD only.
AIM-7F, WAU-10 Warhead	26.1 lbs	Warhead NEWQD only.

Section II – Test Results

Table 3 shows the single missile hazard fragment distances (HFD) determined as part of the Noble Eagle Test Program.

Table 3. Test Results – Single Missile Hazard Fragment Distances

Missile	Single Missile Hazardous Fragment Distance (HFD)
AIM-120, WDU-33/B Warhead	280 ft ¹
AIM-120, WDU-41/B Warhead	335 ft ¹
AIM-9L or M, WDU-17 Warhead	400 ft
AIM-9P, X Warhead	400 ft
AIM-7M, WAU-17 Warhead	280 ft
AIM-7F, WAU-10 Warhead	700 ft

Note 1: From "Noble Eagle Fragment/Debris Questions," Michael M. Swisdak, Jr.

Tables 4 and 5 show the Maximum Credible Event (MCE) for each aircraft configuration from Table 1 above. In some cases for the F-15, the configurations are broken down into cases based on missile configurations and/or positions.

Table 4. Test Results – F-16 Aircraft Configuration Maximum Credible Events

Configuration	Maximum Credible Event (MCE) ^{1,2}
Configuration 1 (4 AIM-120s, 2 AIM-9s)	One AIM-120 and One AIM-9
Configuration 2 (2 AIM-120s, 2 AIM-9s, 2 AIM-7s)	One AIM-9 and One AIM-7
Configuration 3 (2 AIM-120s, 4 AIM-9s)	One AIM-120 and Two AIM-9s
Configuration 4 (6 AIM-120s)	One AIM-120

Note 1: For each missile type, the missile configuration present with the largest NEWQD would be used for calculation of the NEWQD of the configuration MCE. For example, in Configuration 4, if 3 AIM-120, WDU-33/Bs and 3 AIM-120, WDU-41/Bs were present, the NEWQD for the Maximum Credible Event would be 19 lbs (the NEWQD of one AIM-120, WDU-41/B).

Note 2: HFD is based on the largest HFD of any single missile present.

Table 5. Test Results – F-15 Aircraft Configuration Maximum Credible Events

Configuration	Maximum Credible Event (MCE) ^{1,2}
Configuration 1 (4 AIM-120s, 2 AIM-9s, 2 AIM-7s)	
Case 1 – AIM-7s in Rear Fuselage Position	<i>Use whichever produces largest NEWQD:</i> One AIM-7 <i>or</i> One AIM-120 and One AIM-9 One AIM-9 and One AIM-7
Case 2 – AIM-7s in Front Fuselage Position	
Configuration 2 (4 AIM-9s, 4 AIM-7s)	
Case 1 – AIM-7Ms in Front Fuselage Position, and any AIM-9Ps	Two AIM-9s and One AIM-7
Case 2 – AIM-7Fs in Front Fuselage Position	One AIM-7
Case 3 – Only AIM-7Ms, and only AIM-9Ls or 9Ms	One AIM-7
Configuration 3 (6 AIM-120s, 2 AIM-9s)	One AIM-120 and One AIM-9

Note 1: For each missile type, the missile configuration present with the largest NEWQD would be used for calculation of the NEWQD of the configuration MCE. For example, in Configuration 2, Case 2, if 2 AIM-7Fs and 2 AIM-7Ms were present, the NEWQD for the Maximum Credible Event would be 36 lbs (the NEWQD of one AIM-7M).

Note 2: HFD is based on the largest HFD of any single missile present.

Section III – Initial Quantity-Distance Determinations for Aircraft in the Open
 Tables 6 through 12 show the initial Q-D determinations for aircraft in the open.

Table 6. Initial Q-D Determinations for F-16, Configuration 1, in the Open

Configuration 1 (4 AIM-120s, 2 AIM-9s)		MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
a. Only AIM-120, WDU-33/Bs	One AIM-120, WDU-33/B and One AIM-9L/M	24.3 lbs	400 ft (AIM-9L/M)	240 ft	53 ft	100 in	
b. Any AIM-120, WDU-41/Bs	One AIM-120, WDU-41/B and One AIM-9L/M	26.4 lbs	400 ft (AIM-9L/M)	240 ft	54 ft	100 in	
c. Only AIM-120, WDU-33/Bs	One AIM-120, WDU-33/B and One AIM-9P	27.4 lbs	400 ft (AIM-9P)	240 ft	55 ft	100 in	
d. Any AIM-120, WDU-41/Bs	One AIM-120, WDU-41/B and One AIM-9P	29.5 lbs	400 ft (AIM-9P)	240 ft	56 ft	100 in	

Note 1: MCE is based on rule from Table 4.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: Assumes AIM-120s are on the wing tips. IM is 36 inches if AIM-9s are on the wing tips (to maintain 100 inches between AIM-120s).

Table 7. Initial Q-D Determinations for F-16, Configuration 2, in the Open

Configuration 2 (2 AIM-120s, 2 AIM-9s, 2 AIM-7s)		MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
a.1	Only AIM-9Ls or 9Ms Only AIM-7Fs	One AIM-9L/M and One AIM-7F	33.5 lbs	700 ft (AIM-7F)	420 ft	58 ft	100 in
a.2	Any AIM-9Ps Only AIM-7Fs	One AIM-9P and One AIM-7F	36.6 lbs	700 ft (AIM-7F)	420 ft	60 ft	100 in
b.1	Only AIM-9Ls or 9Ms Any AIM-7Ms	One AIM-9L/M and One AIM-7M	43.4 lbs	400 ft (AIM-9L/M)	240 ft	64 ft	100 in
b.2	Any AIM-9Ps Any AIM-7Ms	One AIM-9P and One AIM-7M	46.5 lbs	400 ft (AIM-9P)	240 ft	65 ft	100 in

Note 1: MCE is based on rule from Table 4.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: Assumes AIM-120s are on the wing tips. IM is 36 inches if AIM-9s are on the wing tips (to maintain 100 inches between AIM-120s).

Table 8. Initial Q-D Determinations for F-16, Configuration 3, in the Open

Configuration 3 (2 AIM-120s, 4 AIM-9s)	MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
a. Only AIM-120, WDU-33/Bs Only AIM-9Ls or 9Ms	One AIM-120, WDU-33/B and Two AIM-9L/Ms	31.7 lbs	400 ft (AIM-9L/M)	240 ft	57 ft	100 in
b. Any AIM-120, WDU-41/Bs Only AIM-9Ls or 9Ms	One AIM-120, WDU-41/B and Two AIM-9L/Ms	33.8 lbs	400 ft (AIM-9L/M)	240 ft	59 ft	100 in
c. Only AIM-120, WDU-33/Bs Any AIM-9Ps	One AIM-120, WDU-33/B and Two AIM-9Ps	37.9 lbs	400 ft (AIM-9P)	240 ft	61 ft	100 in
d. Any AIM-120, WDU-41/Bs Any AIM-9Ps	One AIM-120, WDU-41/B and Two AIM-9Ps	40.0 lbs	400 ft (AIM-9P)	240 ft	62 ft	100 in

Note 1: MCE is based on rule from Table 4.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: Assumes AIM-120s are on the wing tips. IM is 36 inches if AIM-9s are on the wing tips (to maintain 100 inches between AIM-120s).

Table 9. Initial Q-D Determinations for F-16, Configuration 4, in the Open

Configuration 4 (6 AIM-120s)	MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM
a. Only AIM-120, WDU-33/Bs	One AIM-120, WDU-33/B	16.9 lbs	280 ft (AIM-120, WDU-33/B)	168 ft	47 ft	100 in
b. Any AIM-120, WDU-41/Bs	One AIM-120, WDU-41/B	19.0 lbs	335 ft (AIM-120, WDU-41/B)	201 ft	48 ft	100 in

Note 1: MCE is based on rule from Table 4.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Table 10. Initial Q-D Determinations for F-15, Configuration 1, in the Open

Configuration 1 (4 AIM-120s, 2 AIM-9s, 2 AIM-7s)		MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
Case 1 – AIM-7s in Rear Fuselage Position							
a.1 Only AIM-7Fs	One AIM-7F	26.1 lbs	700 ft (AIM-7F)	420 ft	54 ft	100 in	
Only AIM-9Ls or 9Ms							
Only AIM-120, WDU-33/Bs							
a.2 Only AIM-7Fs	One AIM-120, WDU-41/B and One AIM-9L/M	26.4 lbs	700 ft (AIM-7F)	420 ft	54 ft	100 in	
Only AIM-9Ls or 9Ms							
Any AIM-120, WDU-41/Bs							
a.3 Only AIM-7Fs	One AIM-120, WDU-33/B and One AIM-9P	27.4 lbs	700 ft (AIM-7F)	420 ft	55 ft	100 in	
Any AIM-9Ps							
Only AIM-120, WDU-33/Bs							
a.4 Only AIM-7Fs	One AIM-120, WDU-41/B and One AIM-9P	29.5 lbs	700 ft (AIM-7F)	420 ft	56 ft	100 in	
Any AIM-9Ps							
Any AIM-120, WDU-41/Bs							
b. Only AIM-7Ms	One AIM-7M	36.0 lbs	400 ft (AIM-9L/M/P)	240 ft	60 ft	100 in	
Case 2 – AIM-7s in Front Fuselage Position							
a.1 Only AIM-7Fs	One AIM-7F and One AIM-9L/M	33.5 lbs	700 ft (AIM-7F)	420 ft	59 ft	100 in	
Only AIM-9Ls or 9Ms							
a.2 Only AIM-7Fs	One AIM-7F and One AIM-9P	36.6 lbs	700 ft (AIM-7F)	420 ft	60 ft	100 in	
Any AIM-9Ps							
b.1 Any AIM-7Ms	One AIM-7M and One AIM-9L/M	43.4 lbs	400 ft (AIM-9L/M)	240 ft	64 ft	100 in	
Only AIM-9Ls or 9Ms							
b.2 Any AIM-7Ms	One AIM-7M and One AIM-9P	46.5 lbs	400 ft (AIM-9P)	240 ft	65 ft	100 in	

Note 1: MCE is based on rule from Table 5.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: Assumes AIM-120s are on the wing tips. IM is 36 inches if AIM-9s are on the wing tips (to maintain 100 inches between AIM-120s).

Table 11. Initial Q-D Determinations for F-15, Configuration 2, in the Open

Configuration 2 (4 AIM-9s, 4 AIM-7s)	MCE ¹	NEWQD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
Case 1 – AIM-7Ms in Front Fuselage Position, Any AIM-9Ps						
a. AIM-7Fs in Rear	One AIM-7M and Two AIM-9Ps	57.0 lbs	700 ft (AIM-7F)	420 ft	70 ft	22 in
b. AIM-7Ms in Rear	One AIM-7M and Two AIM-9Ps	57.0 lbs	400 ft (AIM-9P)	240 ft	70 ft	22 in
Case 2 – AIM-7Fs in Front Fuselage Position, Any AIM-9Ps						
a. AIM-7Fs in Rear	One AIM-7F	26.1 lbs	700 ft (AIM-7F)	420 ft	54 ft	22 in
b. AIM-7Ms in Rear	One AIM-7M	36.0 lbs	700 ft (AIM-7F)	420 ft	60 ft	22 in
Case 3 – Only AIM-7Ms, Only AIM-9Ls or 9Ms	One AIM-7M	36.0 lbs	400 ft (AIM-9L/M)	240 ft	60 ft	22 in

Note 1: MCE is based on rule from Table 5.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: For all cases presented for this configuration, the AIM-9s are on the outer stations and the AIM-7s are on the fuselage. Although the IM between the AIM-9s is 22 inches, the aircraft structure precludes the AIM-9s from being this close.

Table 12. Initial Q-D Determinations for F-15, Configuration 3, in the Open

Configuration 3 (6 AIM-120s, 2 AIM-9s)	MCE ¹	NEW/QD for MCE	HFD/IBD ²	PTR ³	IL ⁴	IM ⁵
a. Only AIM-120, WDU-33/Bs Only AIM-9Ls or 9Ms	One AIM-120, WDU-33/B and One AIM-9L/M	24.3 lbs (AIM-9L/M)	400 ft (AIM-9L/M)	240 ft	53 ft	100 in
b. Any AIM-120, WDU-41/Bs Only AIM-9Ls or 9Ms	One AIM-120, WDU-41/B and One AIM-9L/M	26.4 lbs (AIM-9L/M)	400 ft (AIM-9L/M)	240 ft	54 ft	100 in
c. Only AIM-120, WDU-33/Bs Any AIM-9Ps	One AIM-120, WDU-33/B and One AIM-9P	27.4 lbs (AIM-9P)	400 ft (AIM-9P)	240 ft	55 ft	100 in
d. Any AIM-120, WDU-41/Bs Any AIM-9Ps	One AIM-120, WDU-41/B and One AIM-9P	29.5 lbs (AIM-9P)	400 ft (AIM-9P)	240 ft	56 ft	100 in

Note 1: MCE is based on rule from Table 5.

Note 2: HFD is based on the largest HFD of any single missile present. The HFD is also the IBD, because in all cases it exceeds K40 using the NEWQD for MCE.

Note 3: PTR is 60% of IBD.

Note 4: IL is K18, using the NEWQD for MCE.

Note 5: Assumes AIM-120s are on the wing tips. IM is 36 inches if AIM-9s are on the wing tips (to maintain 100 inches between AIM-120s).

Section IV – Final Quantity-Distance Determinations for Aircraft in the Open

Tables 13 and 14 show the final Q-D determinations for aircraft in the open. The Q-D presented in these tables are only for the aircraft and missile configurations described in Tables 1 and 2.

The variations presented in Tables 6 through 12 have been reduced for purposes of simplification. In many instances, only slight differences in NEWQDs and IL distances existed between some variations. AFSC/SEW determined these differences were not significant, and elected to apply the worst-case NEWQD and IL distance (we will request MAJCOM/SEW concurrence of this determination).

The IM distances presented in Tables 6 through 12 are superseded by the minimum aircraft separation requirement of 10ft, per normal flightline criteria. Therefore, AFSC/SEW has elected to use 10 ft as the default IM distance between aircraft in all cases. However, units may request lesser distances (down to those in Tables 6 through 12) if circumstances require. AFSC/SEW will approve these on a case-by-case basis.

Table 13. Q-D for F-16 Aircraft in the Open

See Notes 1 and 2	NEWQD for MCE	HFD/IBD	PTR	IL	IM ³
Configuration 1 4 AIM-120s, 2 AIM-9s	29.5 lbs	400 ft	240 ft	56 ft	10 ft
Configuration 2a 2 AIM-120s, 2 AIM-9s, 2 AIM-7Fs	36.6 lbs	700 ft	420 ft	60 ft	10 ft
Configuration 2b 2 AIM-120s, 2 AIM-9s, 2 AIM-7Ms	46.5 lbs	400 ft	240 ft	65 ft	10 ft
Configuration 3 2 AIM-120s, 4 AIM-9s	40.0 lbs	400 ft	240 ft	62 ft	10 ft
Configuration 4a 6 AIM-120, WDU-33/Bs	16.9 lbs	280 ft	168 ft	47 ft	10 ft
Configuration 4b 6 AIM-120s, with one or more being an AIM-120, WDU-41/B	19.0 lbs	335 ft	201 ft	48 ft	10 ft

Note 1: Configuration numbers do not correspond to configuration numbers in AFMAN 91-201.

Note 2: Unless otherwise specified,

- AIM-120s must be AIM-120, WDU-33/Bs and/or AIM-120, WDU-41/Bs
- AIM-9s must be AIM-9L, WDU-17s, and/or AIM-9M, WDU-17s, and/or AIM-9P
- AIM-7s must be AIM-7M, WAU-17s and/or AIM-7F, WAU-10s

Note 3: This IM is based on the minimum aircraft separation requirement of 10 ft. If circumstances require locating aircraft at less than this distance, then lesser IM distances may be approved with AFSC/SEW. Request approval through MAJCOM/SEW.

Table 14. Q-D for F-15 Aircraft in the Open

See Notes 1 and 2	NEWQD for MCE	HFD/BD	PTR	IL	IM^3
Configuration 1, Case 1a 4 AIM-120s, 2 AIM-9s, 2 AIM-7Fs in Rear Fuselage Position	29.5 lbs	700 ft	420 ft	56 ft	10 ft
Configuration 1, Case 1b 4 AIM-120s, 2 AIM-9s, 2 AIM-7Ms in Rear Fuselage Position	36.0 lbs	400 ft	240 ft	60 ft	10 ft
Configuration 1, Case 2a 4 AIM-120s, 2 AIM-9s, 2 AIM-7Fs in Front Fuselage Position	36.6 lbs	700 ft	420 ft	60 ft	10 ft
Configuration 1, Case 2b 4 AIM-120s, 2 AIM-9s, 2 AIM-7Ms in Front Fuselage Position	46.5 lbs	400 ft	240 ft	65 ft	10 ft
Configuration 2, Case 1a 2 AIM-7Ms in Front Fuselage Position, 2 AIM-7Fs in Rear Fuselage Position, 4 AIM-9s	57.0 lbs	700 ft	420 ft	70 ft	10 ft
Configuration 2, Case 1b 4 AIM-7Ms, 4 AIM-9s	57.0 lbs	400 ft	240 ft	70 ft	10 ft
Configuration 2, Case 2a 4 AIM-7Fs, 4 AIM-9s	26.1 lbs	700 ft	420 ft	54 ft	10 ft

Table 14. Q-D for F-15 Aircraft in the Open (Continued)

See Notes 1 and 2	NEWQD for MCE	HFD/IBD	PTR	IL	IM³
Configuration 2, Case 2b 2 AIM-7Fs in Front Fuselage Position, 2 AIM-7Ms in Rear Fuselage Position, 4 AIM-9s	36.0 lbs	700 ft	420 ft	60 ft	10 ft
Configuration 2, Case 3 4 AIM-7Ms, 4 AIM-9Ls or 9Ms	36.0 lbs	400 ft	240 ft	60 ft	10 ft
Configuration 3 6 AIM-120s, 2 AIM-9s	29.5 lbs	400 ft	240 ft	56 ft	10 ft

Note 1: Configuration numbers do not correspond to configuration numbers in AFMAN 91-201.

Note 2: Unless otherwise specified,

- AIM-120s must be AIM-120, WDU-33/Bs and/or AIM-120, WDU-41/Bs
- AIM-9s must be AIM-9L, WDU-17s, and/or AIM-9M, WDU-17s, and/or AIM-9P, 10.5lb Warheads
- AIM-7s must be AIM-7M, WAU-17s and/or AIM-7F, WAU-10s

Note 3: This IM is based on the minimum aircraft separation requirement of 10 ft. If circumstances require locating aircraft at less than this distance, then lesser IM distances may be approved with AFSC/SEW. Request approval through MAJCOM/SEW.

Section V – Considerations for Aircraft in Buildings

Table 15 shows Q-Ds for aircraft in two different types of structures, for the aircraft configurations in Tables 13 and 14.

Table 15. Q-Ds for Aircraft in Structures for Configurations in Tables 13 and 14

	IB	PTR	IL/IM
Fabric/Tubular Shelter	HFD	Note 1	Note 2
Light Metal Structure	Greater of HFD, or Debris IB ³	Note 1	Note 2

Note 1: PTR is 60% of IB.

Note 2: IL and IM distances are the same as determined for "open" in previous section.

Note 3: Debris IB is determined from the table below, using the NEWQD for the MCE of the configuration. Interpolation is allowed. Minimum Debris IB is 279 ft.

NEWQD	Debris IB
20 lbs	279 ft
40 lbs	357 ft
60 lbs	410 ft